

REMARKS

Claims 33, 42, 48, 51, 55, 58, and 62 are amended. Claims 52, 59 and 67 are canceled. New claims 70-72 are added. New claims are supported by the originally-filed application at, for example, pages 7-9 and 11. Claims 33-51, 53-58, 60-66 and 68-72 remain in the application. Reconsideration of the application in view of the amendments and the remarks to follow is requested.

The drawings are amended for correction as shown. No new matter is added as Fig. 3, as amended, is clearly described in the originally-filed application at, for example, page 9, lines 3-12.

The abstract is amended as requested by the Examiner.

The title is amended as requested by the Examiner.

Claims 42-46 stand rejected under 35 U.S.C. §102(a) as being anticipated by Sakai et al. (6,034,409). Claim 47 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Sakai et al. Claims 33-41 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Noguchi (5,969,393) in view of Sakai et al. Claims 48-54 and 62-69 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Noguchi and Sakai et al. and further in view of Wang et al. (6,171,924). Claims 55-61 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Noguchi, Sakai et al., Wang et al. and further in view of Kim (6,154,417).

Regarding the obviousness rejection against independent claim 33 based upon Noguchi and Sakai, such claim is amended to recite a first isolation trench portion having a first depth and having a first sidewall intersecting a surface of

silicon at a first angle, the first sidewall comprising at least a length ranging from 50 Angstroms to 500 Angstroms. Such amendment language is supported by the originally-filed application at, for example, the last paragraph of page 8 to the first paragraph of page 9. Noguchi and Sakai are completely devoid of any teaching to a sidewall dimension. Accordingly, it is inconceivable that Noguchi or Sakai, in any combination with the art of record, could teach or suggest a first sidewall comprising at least a length ranging from 50 Angstroms to 500 Angstroms as recited in claim 33. Noguchi and Sakai, in any combination with the art of record, fail to teach or suggest a positively recited limitation of claim 33, and therefore, claim 33 is allowable.

Claims 34-41 depend from independent claim 33, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not shown or taught by the art of record.

Regarding the anticipation rejection against claim 42 based on Sakai, such claim is amended to recite a second isolation trench portion having a bottom portion at a second depth of a semiconductor, the bottom portion being doped relative adjacent portions of the semiconductor. Such amendment language is supported by the originally-filed application at, for example, page 11. Sakai is completely devoid of any teaching or suggestion to a bottom portion [of a trench] being doped. Accordingly, it is inconceivable that Sakai, singularly or in any combination with the art of record, teaches or suggests the second isolation trench portion having a bottom portion at a second depth ... being **dop d** as

recited in claim 42. Accordingly, Sakai fails to teach or suggest, singularly or in any combination with the art of record, a positively recited limitation of claim 42. Claim 42 is allowable.

Claims 43-47 and 70-72 depend from independent claim 42, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not shown or taught by the art of record.

Regarding the obviousness rejection against claim 48 based on the combination of Noguchi, Sakai and Wang, such claim is amended to recite a first isolation trench portion having a first depth and having a first sidewall intersecting a surface of a silicon at a first angle comprising about 35 degrees. The amendment language is supported by the originally-filed application at, for example, page 7. Noguchi and Wang fail to teach trench sidewall angles and Sakai teaches a trench 11a that has a sidewall sloped at an angle A1 of about 45 degrees to about 80 degrees with respect to the surface of a substrate 1 (col. 9, lines 53-57; Figs. 7-8(a-d)). In no fair or reasonable interpretation is an angle range of 45 degrees to 80 degrees teach or suggest a first angle comprising about 35 degrees as recited in claim 48. Accordingly, the art of record fails to teach or suggest a positively recited limitation of claim 48, and therefore, claim 48 is allowable.

Claims 49-51 and 53-54 depend from independent claim 48, and therefore, are allowable for the reasons discussed above with respect to the independent

claim, as well as for their own recited features which are not shown or taught by the art of record.

Regarding the obviousness rejection against independent claim 55 based on the combination of Noguchi, Sakai, Wang and Kim, such claim is amended to recite a first isolation trench portion having a first depth and having a first sidewall intersecting a surface of the silicon at a first angle comprising about 40 degrees. The amendment language is supported by the originally-filed application at, for example, page 7. Noguchi, Wang and Kim fail to teach trench sidewall angles and Sakai teaches a trench 11a that has a sidewall sloped at an angle A1 of about 45 degrees to about 80 degrees with respect to the surface of a substrate 1 (col. 9, lines 53-57; Figs. 7-8(a-d)). In no fair or reasonable interpretation does an angle range of 45 degrees to 80 degrees teach or suggest a first angle comprising about 40 degrees as recited in claim 55. Therefore, the combination of art fails to teach or suggest a positively recited limitation of claim 55, and therefore, claim 55 is allowable.

Claims 56-58 and 60-61 depend from independent claim 55, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not shown or taught by the art of record.

Regarding the obviousness rejection against claim 62 based on the combination of Noguchi, Sakai and Wang, such claim is amended to include the limitation of claim 67. As amended, claim 62 recites a first isolation trench portion having a first depth, and the first depth is between five and fifty percent

of a total trench depth. Other than Sakai, the references are devoid of teachings to trench depths. Sakai teaches an etching to form a trench 11a having a depth of about 30 nm to about 300 nm (col. 9, lines 52-56; Fig. 8(a)) and etching to dig the trench 11a to provide a trench 11 having a depth of about 50 nm to about 500 nm (col. 10, lns. 9-16; Figs. 8(c)). Sakai does not teach or suggest a **relationship (such as a percentage relationship) between** a specific dimension of trench 11a relative to a specific dimension of trench 11. That is, the Examiner can not arbitrarily (antithesis to a teaching) pick one specific depth dimension out of a first depth range and then compare it to an arbitrarily chosen second depth to suggest a teaching to a percentage relationship. Accordingly, in no fair or reasonable interpretation does Sakai, singularly or in any combination with the art of record, teach or suggest the first isolation trench portion having a first depth of between five and fifty percent of a total trench depth as recited in claim 62. Sakai fails to teach or suggest, singularly or in any combination with the art of record, a positively recited limitation of claim 62, and therefore, claim 62 is allowable.

Claims 63-66 and 68-69 depend from independent claim 62, and therefore, are allowable for the reasons discussed above with respect to the independent claim, as well as for their own recited features which are not shown or taught by the art of record.


Further, Applicant herewith submits a duplicate copy of the Supplemental Information Disclosure Statement and Form PTO-1449 filed in this application on January 28, 2003. No initialed copy of the PTO-1449 has been received back

from the Examiner. To the extent that the submitted references listed on the Form PTO-1449 have not already been considered, and the Form PTO-1449 has not been initialed with a copy being returned to Applicant, such examination and initialing is requested at this time, as well as return of a copy of the initialed Form PTO-1449 to the undersigned.

In view of the foregoing, allowance of all pending claims is requested. This application is now believed to be in immediate condition for allowance, and action to that end is respectfully requested. If the Examiner's next anticipated action is to be anything other than a Notice of Allowance, the undersigned respectfully requests a telephone interview prior to issuance of any such subsequent action.

Respectfully submitted,

Dated: 6-13-03

By: 
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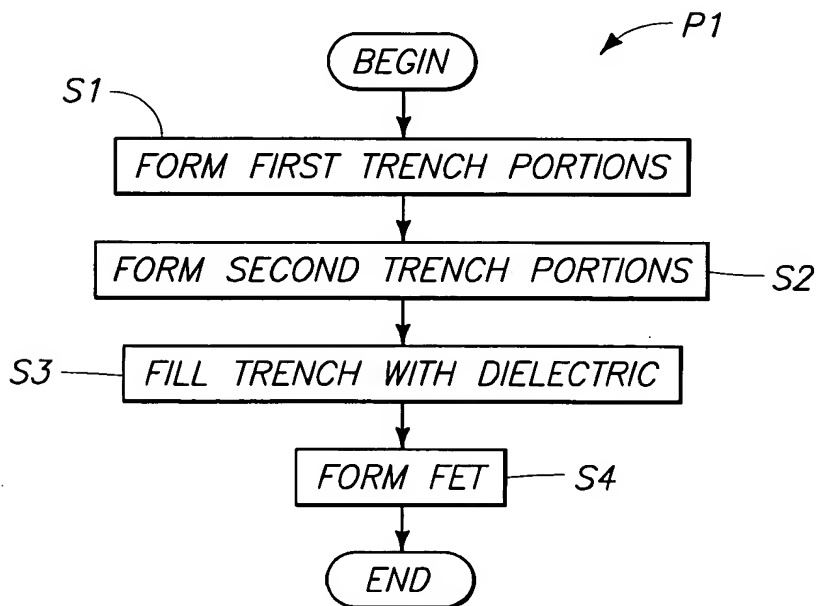
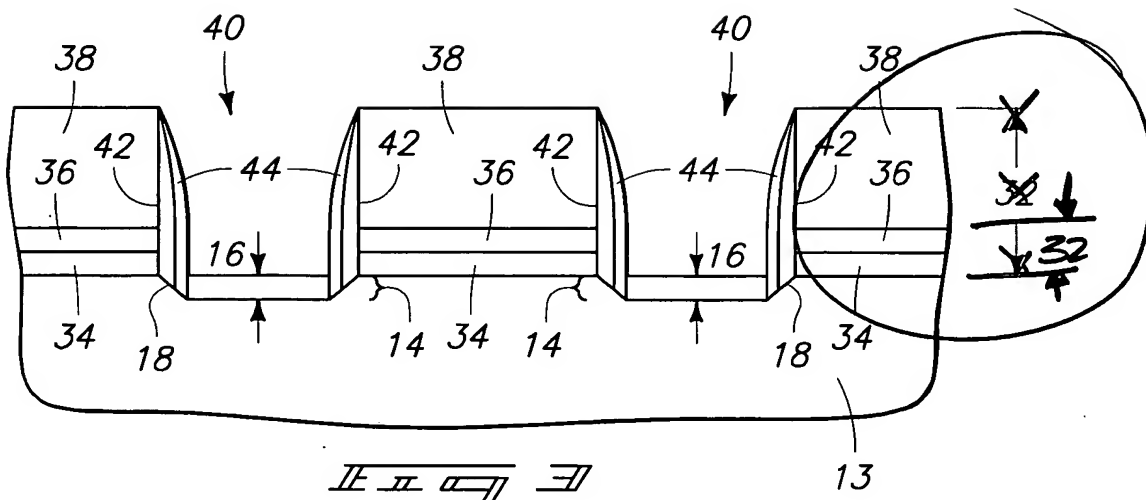


FIG. 2